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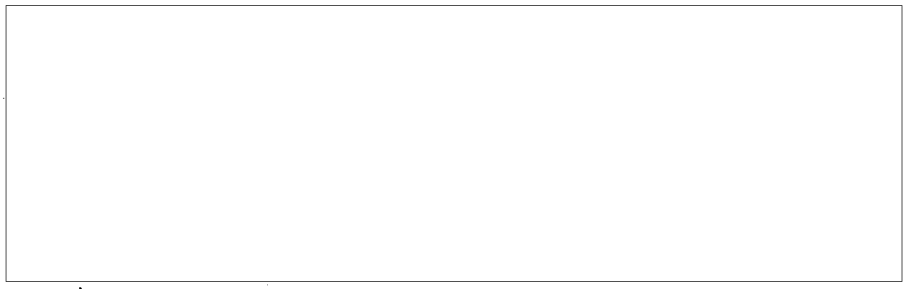

DIVIDED WATER ECONOMY IN THE ZONE BOUNDARY REGION OF THE HARZ

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The Harz with its forelands is cut in 2 by the zone boundary. This is the result of the last war and historical development. During the early settlement the tribes were pushed up the valleys by the Harz nobility. Thuringians and Saxons met approximately on the mountain water divide which runs in an east-west direction. This has remained until today the language boundary between Low German and Middle German (cf. Figure 1).

The zone boundary of the twentieth century now runs perpendicular to this language boundary across the Harz, i.e., from north to south. The multiplicity of regional Harz areas has in this way been enriched by a new geographical-historical variety. Not entirely guiltless in this development have been the waters of the Harz which, in the rugged, impassable mountains were the centers of operations of despots. Power in the Harz meant despoiling the natural resources, which in their most valuable form consisted of mining and processing the lead, copper, and silver ores. Mining and smelting was possible only with the help of the energy contained in wood and water -- wood for fires in the mine shaft and charcoal in smelting; water for hydraulic mining and conveyance underground, or for operation of machinery

and stamp milling aboveground. Thus the rivers of the Harz become lines of fate. Due to their accessibility they opened the way to the mountains and their riches. Because they delimited economic -- and therefore political -- power spheres, they denied the land to the neighbors, to the rivals for possession of land and claims of dominion. The boundaries which were thus established after many centuries have now become a curtain between 2 systems which are no longer small, but rather the 2 mighty systems of power and economy.

Did the waters of the Harz thus have to become its affliction, which are after all its blessing, its wealth? Is the dispensation not for us which the psalmist offers: who has given the waters their course? All the things of this earth, whether they be material or spiritual, have a tangible and a dynamic content. Only he who is aware of the dynamic content of a thing can make himself master of its matter. There has been no lack of attempts to fashion vigorous cohesion in the natural region of the Harz. But the resistance which has been hurled against such attempts has been just as strong, and with the same exertion of energy. What surging enthusiasm there was in 1938 when a reservoir lake was constructed on the Ecker, across the boundaries of 3 "states" of the one nation! Now the "curtain" runs right over the middle of the dam wall. Still in 1956 the former Hanover-Brunswick boundary is causing difficulties in the licensing of the Oker Valley dam, although the areas on both sides are today united in the same state of Lower Saxony! Does political community cease at the waters? Do we have to take special pains to find solutions for the problems of these arteries of history, since the obduracy of the Middle Ages led us to the present state of boundary drawing? Several impressive phenomena in the zone boundary region of the Harz will be sketched here, as they confront us politically in our common utilization of the waters.

There has never been any compulsion to maintain streams as "natural" lines of delimitation for all time. Water-divides and dividing streams offered themselves as prominent lines in the landscape. This usage spring essentially from human convenience, and has been depicted in an amusing and vivid manner by Abbott Sturm who, at the commission of the Carolingians, was carrying out surveys in this form in 744 in the Hersfeld region for the Rankish land occupation. This was good training for the division by the masters of other Frankish conquests, also in the Harz. That the needs of the inhabitants and the historical development of a region often enough went beyond the narrow area naturally determined by a stream is a fact we can encounter repeatedly in the old as in the present border area of the "Harz."

Into these circumstances and conditions of life which have really developed naturally this socalled "border" cuts with unnaturally harsh and disruptive division. If the cut is deep and if the scars of the cut surfaces become in time more and more calloused on both sides, then a new filling up of the space must take place, forcibly and contrary to all natural circumstances and eventualities. The result is becoming accustomed to the conditions, which slowly evolve from unnatural constraint to a matter of fact which is at first endured, later recognized as historical fact.

There are plenty of examples of this in the Harz of the past. From the compulsion of dynastic, religious, economic, and now also political striving for mastery, the petty states and their boundaries have arrived at such a constricted area, often enough in contrast to a reasonable conformation and natural interrelationship. Proof of how close they came to each other and quarreled with one another over pathway and region is attested to by the names

"Dreiherrenstein" [Three Masters' Rock], "Dreieckiger Pfahl" [Three-cornered Stake], "Dreiherrenbruecke" [Three Masters' Bridge]," "Losbuchen (Lausebuchen) [Lousy Grove], "Streitberg" [Quarrel Mountain], "Streitort" [Quarrel Place], "Urbach" [Original Brook], "Markau" [Boundary Meadow], "Schneidwasser" [Split Water] (see Figure 2). In 1635 the name of the Altenau, the valley of which gave its name to the little hill town, had to give way to a boundary designation, when the heirs of the Grubenhagen-Wolfenbuettel lands established a new dividing line on the "Schneidwasser." The wanderer through the Harz has never been disturbed by the motley of boundaries and boundary markers; at most he has thought the latter to be curiosa of a strange past, not realizing how close to the present their existence still is. The boundary determination of 1945 often had to disregard the obvious conditions in favor of an "expeditious" (certainly not "magnanimous") laying out of the line, if it did not wish to include the many little indentations. Since the state of Brunswick was to belong to the British zone, but exhibited such heavy scattering of its shares of the Harz, north Thuringian parts had to be assigned to the western zone to make up for the eastern Brunswick regions.

How in this way the first beginnings of an organic development of the economy -- which stands in direct contrast to the cutting up of a region for political reasons -- can be endangered once again by political fiat, is taught by the example of the water-supply cooperative in the southern Harz. In the foreland of the southern Harz, between Nordhausen and Bad Sachsa, in the northern part of Thuringia, the porous limestone and gypsum soil absorbed the fresh water coming from the Harz before it could be of any use to the numerous villages of this region. The water which reappears at the surface in springs is almost unusable because of

hardness and bacilli. Frequent epidemics and concern for the general welfare for once overcame political boundaries and created the unity of the living. On the other side of a "Dreiherrenstein" (by Ravensberg) in the state of Hanover, the Steinabach brings Harz water in abundant depth and the best quality, before it seeps away and thereafter is of use to no one. Perhaps this was the reason why one was prepared to give up its water? At any rate, in the year 1933 the long prepared project was realized. Hanover water was furnished to north Thuringian localities! Now the zone boundary cuts off the nourishing source from the region which it supplied. Vigilant adaptation to the political vicissitudes of the last few years was required, whereby a firm hold on the pipe valve was a retaliatory threat to the closing off of the stream which was desired "over there."

The Harz with its central location with respect to the industrial region of Mansfeld, Halle, Merseburg lying to th east and to the important cities of Salzgitter, Braunschweig, Wolfsburg, would be in a position to influence decisively the development of these regions with its sources of energy and raw materials. In an age when other countries are undertaking large-scale transformations in order to join regions which have been neglected by nature to more abundant sources of supply, surmounting water divides in order to give a different course to streams, damming rivers to water deserts, in this age a 3-crop economy is being carried on in the Harz, thanks to the "Dreiherrenstein"! One region is laboring for an intensive soil economy, and close by they are idling in the contemplative original state of fallowness, and finally in a third they are nobly competing to do what can be of no use to the others. The condition of the roads is especially noticeable at such "state boundaries" where maintenance is only carried

up to the edge of the roads. After World War I a plan once emerged to give the Harz a unified comprehensive administration. The realization of this would have surely given a different aspect to the zone boundary of 1945. Let us not be angry with our fathers, who fought the idea instead of allowing it to become a fact. Today it is no better at the "Zweiherrenstein" [Two Masters' Stone]!

Bold realists without questioning politics or the sovereign powers, have set up plans which were to give validity to the prevailing nature of the Harz. It began in 1907 with a Society for the Development of the Water Economy in the Harz. It ended in 1910 with a memorial "in 3 languages" to the 3 participating states of Prussia, Brunswick, and Anhalt. In the year 1920 followed the second "centralized" attack, which aimed at a joint use of the Harz waters for the Midland Canal. Later the federal government abandoned this undertaking. Again in the year 1924 a collection of all the waters of the Harz which are usable for power into an Upper Harz project came to the point of an intensive discussion. The result was that the "local free-holders" heard their own hour striking and now occupied their positions against the large scale ideas with local plannings. Nor should the bold decision of the Forty-fifth Congress of the Province of Saxony be forgotten, which induced the Prussian Ministry of State to proclaim "that upon the eventual unification of the states of Brunswick and Prussia the new boundary line between the provinces of Saxony and Hanover in the Harz be moved to the water divide between the Elbe and Weser." The opinion of the Prussian Ministry of Agriculture, Interior, and Forests, which had been requested by the governor of the province of Saxony, contained a complete discussion of the effect of the recommended measure on the water economy of the Harz.

Some of these attempts suffered from a one-sided emphasis of the desired effect on the economy (improvement of navigation, power consumption) or from a disregard for the natural boundary lines. There existed no comprehensive knowledge of the water resources which were actually available, or of their accessibility. A plan which builds on great ideas but a narrow basis runs the danger that the actual elements, because they are more solid, will cause the downfall of the ideas, unless they themselves are solidified by facts! As long as no verified figures make the often splendid idea of projects unassailable, anyone in the political game can take up his position for or against the plan with fictitious figures, and all the more easily, too, the more one-sided the exploration was toward the desired goal. It was therefore necessary to perform pioneering service for cumbersome politics -- because it is carried on by people bound by tradition -- and to harness bipartisan scientific knowledge to achieve a communal advantage.

Following the first beginnings in this direction made by the above-mentioned Society for the Improvement of the Water Economy in the Harz, the Harz Water Projects of the Province of Hanover pursued the exact same path through its Hydrological Bureau. Even though politics and administrative boundaries prescribed the scope of their mission, still there was an open field for science. With it they succeeeded in attacking behind that "Dreieckiger Pfahl" (on the western slope of the Brocken) and in investigating the Upper Harz region, a region whose hydrographic elements had to be examined as a unit. Far from any political squabbling and administrative diversity, the nature and peculiarity of the region around the Brokken [sic], the highest massif of the Harz and the richest in water, were thoroughly reconnoitered and its secrets were caught up and recorded in numerical values through measurements, observations,

and 'nostrio ... ...t have been possible to collect a ... and scientific body of material from this central point of the mountain range, the source of the great Harz streams. With a bold flight of fancy, and with great hopes for the development of some insight on the political side, a splendid deed could have ensued from the tranquillity of this scientific work on such a small scale. In this symbol of large-scale economic unification extending beyond all political boundaries, such hopes might have awakened an echo among the intellects and technicians of their time. The zone boundary of 1945 destroyed this path of research activity, which promised at last a genuine unlocking of the water treasures of the Harz.

Conditioned by this new line of demarcation, which meanwhile solidified into an Iron Curtain, plans were fashioned which bear the stamp of political emergency measures and which run counter to all scientific and practical considerations. The sectioning of the Harz area by political, but unnatural boundaries more and more demanded solutions from this exigency which indeed seemed to satisfy the spirit of its inhabitants and its economy in relation to a narrow river region. But from the overall point of view these are hindrances to a grand panorama which prevent a large-scale plan for the future.

With the above described "ultramontane" scientific concept of natural possibilities there certainly was no real basis at the time for their practical prosecution within the political and administrative boundaries. Thus plans and construction came about in a prescribed frame which was well guarded and restricted by the boundary handed down by tradition. A state court decree of 1937 decided in response to a new attempt at the unified water economy

of the Harz that "the water shall remain in every individual river basin." The "3-crop economy" in the water economy of the Harz was continued. In the area of the former Hanoverian Harz the Harz Water Projects of the Province of Hanover built valley dams with the most varied purposes and service areas, predominantly with a northwestern tendency. In the neighboring free state of Brunswick prime consideration was given to forestry and hunting. East of the great boundary a Valley Dam Union of the East Harz was planning reservoirs and industrial construction with just as far-reaching service areas in an easterly direction (see Figure 3).

Therefore, sometime, at some place contact would have to be made. The question was only with what degree of intellectual foresight this point would be approached. The broad view recognizable on both sides in any case had prepared their minds to the extent that an offer of mutually balanced land employment had been made. This was embodied in an exchange of preliminary scientific results and some administrative contacts, plus the division of the contact zone into water supply areas. The waters of the Ecker and Ilse which lie in the western river region (Weser), but which are already either partly or wholly in the eastern political region, were to be assigned an identical watershed region, that is eastern or western, by means of a closed-circuit pipe line under cooperative management. The zone boundary now runs along almost the entire course of the Ecker and divides the drainage area of the river. Also, it is a peculiar monument to these times -- with its iron-spiked cross wall on the dam -- and a graphic symbol of the iron curtain. This zone boundary prevented any distribution of the eastern part. That caused difficulties for many a year after the completion of the Ecker valley dam, because the planned withdrawal of water was not carried out. Again the solution had to be directed

by necessity: the distribution was directed entirely to the west, and that means a hardship for the eastern partner, who has to get along as best he can. The cuts will heal over on the surface, and an unnatural area settlement will again produce a final separation.

Even if a conflict at the junction of the east and west Harz was avoided thanks to the solidarity of the planners, and if it was the zonal boundary, which is a continuation of the one drawn up in the Middle Ages, which managed to turn a reasonable idea into its opposite, it nevertheless seems unavoidable now. The cementing of the divided areas on both sides and the pressure for new settlement of the divided regions are now inevitably leading to designs which appear to be set up in contrast to a natural, clear form. The east intends to use the waters of the Ilse (which indeed belongs to the political realm of the east, but belongs to the watershed of the western Oker) for water supply in its own region. Large-scale planning, such as is now in progress with the idea of a unified management of the Oker watershed, must of course be considerably influenced by this. Again these are solutions which, being based on necessity, give rise to necessity. Thus the water economy in the Harz goes the way of the Echternach dancing procession: 3 steps forward and 2 steps back, because not only in the past but also in the present, one has failed to give up unnatural boundaries. In order to get one step forward, a penalty of 5 steps back must be paid. Four of them are wasted because 2 of them are made in vain forward, and 2 back again. This means so much additional force in human energy, loss of temper, quarreling, unnecessary friction, and falling out, so much expense in national wealth and for unsuccessful undertakings, that only 1/5 of the actual accomplishment is left. Such a procedure is not rational.

Will perhaps our present distress over the zone boundary keep vivid in our minds the deeper and much older distress over the alleged "paramount interests" of each tiny section? We want a united Germany, if possible, in a united Europe. And if it should get to that point, shall then the patchwork of the Harz regions with all the "Dreiherrenstein," "Streitorte," boundaries and sovereignties continue to exist? Will the "2 steps back" continue to be forced upon coming generations? The wish for the reunification of Germany which is just as heartfelt on a mountainside in the midst of the Harz as it is between the Baltic and the Danube, shall take on real form in the promise to take upon us the task of being ready for unity in our own realm, and to banish forever any division and mutual obduracy, and to devote all our steps -- not just one out of 5 -- to a freely advancing, blessed and all-embracing, development in the service of all!

The Water Resources of the Harz

The multiplicity inherent in the political distribution of land and the economic parcelling which results from it is reflected in the recapitulation of the water resources of the Harz. Closely neighboring mines and smelters and the compulsion to make use of even the smallest streams and falls led to an accumulation of gathering basins, especially in the rain-rich western Harz. Thus during the heyday of the upper Harz ore mining, thanks to the many competing undertakings ("Works"), there were on the Clausthal plateau 67 valley dams ("ponds") of varying size. Here a later consolidation after the political consolidation attained a cooperative management of great perfection through the "Fiskus" (today the Prussian Mining and Smelting Company or Preussag). Instead of small private heads of 4 to 16 m, a generous unification of the

 le power stages of 130 to 364 m now dominates the water economy of the western Harz. With the water economy which was actively developed in the sixteenth century the Harz is far ahead of the west German region, where the first construction to be noted took place in 1890 in the Wupper Valley (Eschbach Dam), in 1895 in the Ruhr Valley (Fuelbecke Dam and Heilenbecke Dam).

A chronological division of the water economy in the Harz leads to the following summary. 1. For the utilization of the water resources of the Harz for purposes of mining (with a few early predecessors for fish culture near Zellerfeld and Walkenried) altogether 67 ponds with a total of 10.5 million cu m of reservoir water were built in the upper Harz between the sixteenth and the eighteenth centuries. The largest project of this kind was the Oder Pond with 1.67 million cu m, built between 1714 and 1721. In the case of the reservoirs of the Upper Harz near Clausthal-Zellerfeld the basins have a capacity of 700,000 to 20,000 cu m; the oldest report about the building of these reservoirs dates back to the year 1551. After the consolidation of the gathering basins and heads between 1930 and 1942, 10 to 12 million kwh have been produced per year from the old upper Harz water economy, and 3.5 million kwh from the Odertoich water economy.

A second group of water power and water supply installations for mining operation is to be noted in the eastern Harz in the area of Stiege-Guensterberge-Harzgerode. Numerous small ponds and conveyor ditches are embedded in the plateau of the mountain range here, which have been employed in iron and silver production.

2. Long-distance water supply of drinking water from the Harz was begun by the city of Nordhausen in the year 1906 when it

built the Nordhausen Dam north of the village of Neustadt. When it was built in 1906 it contained 845,000 cu m, and in 1923 it was enlarged to 1.23 million cu m. The city of Wernigerode followed suit in 1936 with the Zillerbach Dam with about 2.50 million cu m reservoir capacity. The Southern Harz Water Supply Cooperative since 1933 has been furnishing water to Bad Sachsa and the communities of the northwestern district of Nordhausen. This water is obtained from the ground water of the Steina valley.

3. Since 1926 modern major construction for water economy in the Harz has no longer been devoted to local mining use or to supply of nearby localities. The scope of the installations and the decrease in local requirements as a result of the exhausting of ore resources make it possible to supply water over a greater distance. These missions are appreciably enlarged in comparison to earlier accomplishments, so that industry in the roomy flat land can be presented with the energy and raw material available in the waters of the Harz. The appended listing may explain the missions of these new dams.

Soese Valley Dam: Soese near Osterode. Built 1928-31. Capacity 25.5 million cu m. Builders: Harz Water Projects of the Province of Hanover.

Functions: High water protection as far as the central Leine; elevation of the low water transport for factories and agriculture (round water); power production yearly 3 million kwh; drinking water supply in a 200 km long queduct to Hildesheim, Bremen, and various rural water cooperatives, plus the Federal Railroad, in the amount of 14-17 million cu m yearly.

Oder Valley Dam: On the Oder near Bad Lauterberg. Built

1930-1934. Capacity 30.6 million cu m. (Harz Water Projects) Functions: Flood control and elevation of low water transport (like the Soese Valley Dam). Power production 9-10 million kwh yearly. Making up the loss of drinking water diverted by the Soese Valley Dam into the Rhume and Leine.

Ecker Valley Dam: On the Ecker near Bad Harzburg. Built 1938-1942. Capacity 12.6 million cu m. (Harz Water Projects). Functions: Flood control; yearly power production 1 million kwh. Delivery of 12 million cu m of drinking water yearly in an 84 km long aqueduct to Oker, Goslar, Brunswick, Wolfsburg.

Oker Valley Dam: On the Oker near Altenau. Built 1938-1956. Capacity 47.4 million cu m (Harz Water Projects). Functions: Flood control for the northern Harz foreland as far as Brunswick. Elevation of low water transport for factories, ground water, industrial waste water. Power production yearly about 12 million kwh. A drinking water aqueduct is planned in the area between Harz and Heide of 20 million cu m annual capacity.

Bode Valley Dams: Bode and Rappbode near Wendefurth. Construction began 1938 (Eastern Harz Water Association). Transfer of the Bode water gathered near Koenigshof through a tunnel to the Rappbode Dam (96 million cu m), collection of the water remaining in the Bode and the water used for power production from the Rappbode Dam in the "Wendfurth Dam" (10 million cu m). Transfer of all the water in pressure tunnels to Thale. Here is planned a power plant of 44 million kwh per year and drinking water supply to Magdeburg of 15.8 million cu m. Elevation of the summer runoff and rainwater in the Bode plain.

Wipper Valley Dam: On the Wipper near Wippra (Eastern Harz

Water Association, now the VEB [Volkseigener Betrieb -- People-owned Enterprise] Wasserwirtschaft Kode. Construction began 1951, late in 1952 the secondary dam was completed at Wippra (2 million cu m). Main dam (35 million cu m planned above Wippra. Functions: flood control; delivery of water to the industrial area of Mansfeld-Hettstedt. Yearly power production 1 million kwh. Supplying 12 million cu m drinking water per year for the Bode aqueduct.

Sieber Valley Dam: On the Sieber at Herzberg. Projected drinking water dam of 14 million cu m capacity, annual drinking water draft of 25 million cu m planned for the direction of Hanover.

Ilse Valley Dam: On the Ilse above Ilsenburg. Projected drinking water dam of 14 million cu m capacity, annual drinking water draft of 8.9 million cu m planned, water supply region formerly north and northeast Harz foreland.

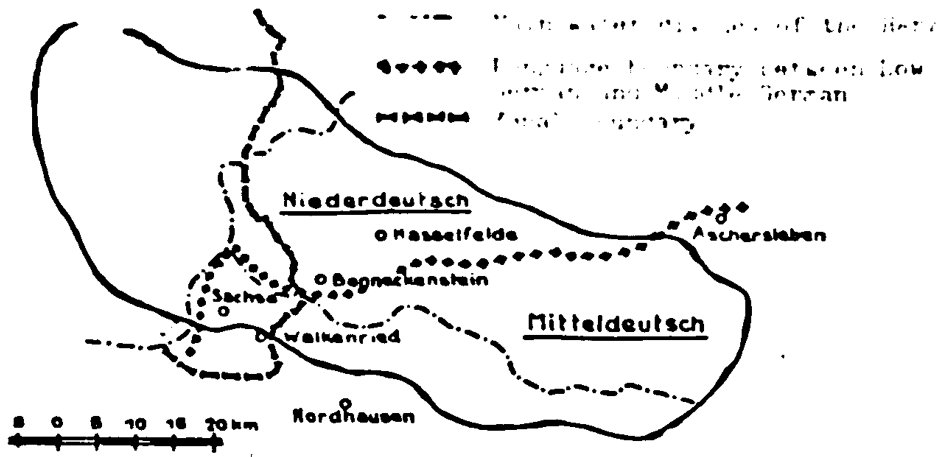
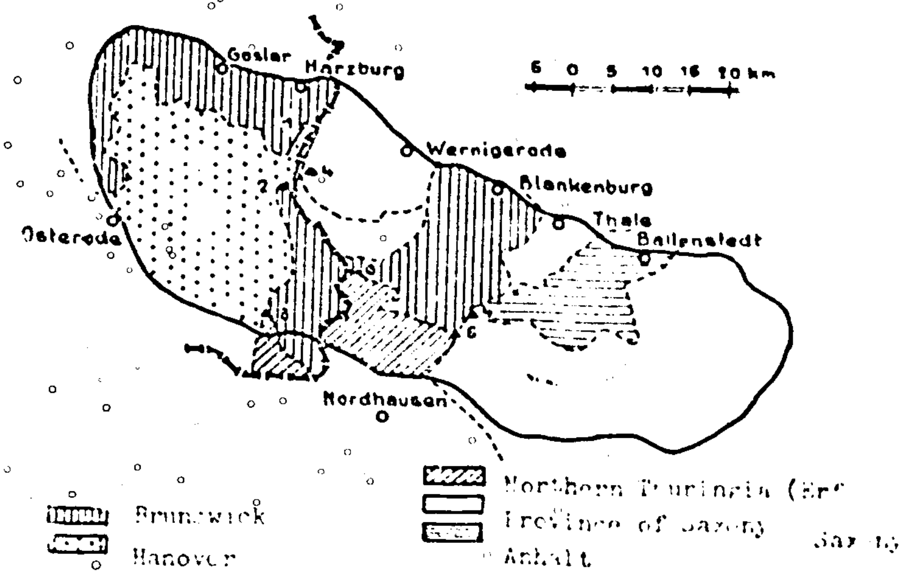


Figure 1



1. Dreiherrenbrucke; 2. Dreieckiger Pfahl; 3. Dreiherren Stein; 4. [illegible]; 5. Strei[illegible]; 6. Streithof

The Harz territories and the zonal boundary of 1945 [illegible]

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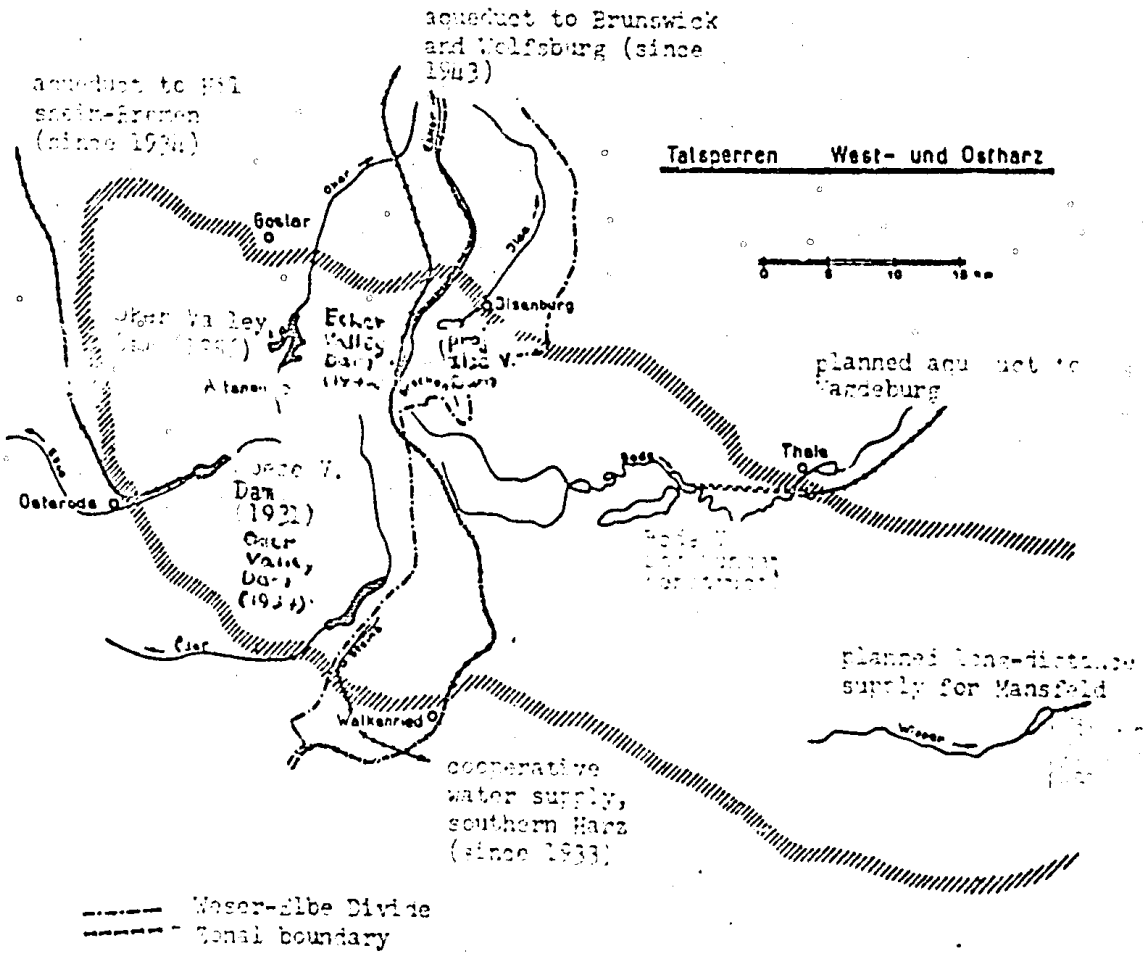

Figure 3. Valley Dams in the Western and Eastern Harz